



DENTAL CORRECTION OF A SKELETAL CLASS III MALOCCLUSION: A CASE REPORT

Dental Science

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ABSTRACT

The patient was a 26 year old man with a Class III skeletal pattern and an anterior crossbite and a deficient maxilla. Ideally a surgical treatment plan would be advised, but the patient did not want to go for surgery. The treatment started with proclination of the upper anteriors and a positive overjet and overbite was achieved.

KEYWORDS

Class III malocclusion, cross-bite.

Introduction

A Skeletal Class III malocclusion is a challenging orthodontic problem. Without a good understanding of the age, growth and direction, treating a Class III malocclusion would be very difficult. The treatment of choice for an adult patient with a severe skeletal Class III malocclusion and a midline deviation is combined surgical and orthodontic treatment, because of its satisfying outcome and stability.¹ Orthodontic camouflage is a therapeutic process that most of the time, through extractions and orthodontic correction masks the skeletal discrepancies instead of correcting them. Therefore, dentoalveolar compensation is made without correcting the basal dysplasia.²

Camouflage treatment with or without selective extractions is usually done for borderline patients. However, we sometimes treat patients with severe problems who do not want surgery as a part of their treatment plans.³ Our patient did not want to go the surgical route and hence was treated by correcting the dental problems.

In cases treated by orthodontic camouflage, the dental movements are different than those necessary to be treated by surgery, where dentoalveolar decompensation is the objective. Orthodontic camouflage treatment should be done only for young adults where residual growth will not worsen the deformity after treatment, causing dentofacial asymmetry. Camouflage also implies that the tooth repositioning will have a favorable effect or at least be less damaging to the facial esthetics⁴

Here, we report a nonsurgical treatment approach and its outcome for an adult patient with a skeletal Class III malocclusion and anterior cross-bite.

Case Description & Results

A 26 year old man visited the Department of Orthodontics and Dentofacial Orthopaedics with a chief complaint of anterior crossbite. The patient had class III skeletal pattern with retroclined lower incisors. There was no apparent facial asymmetry and the lips were competent. In the intra-oral assessment, the oral hygiene was good.

A concave profile was observed. The midline of the maxillary dentition was shifted 2 mm to the right. The cephalometric analysis confirmed a skeletal Class III jaw relationship with a retrognathic maxilla. Additionally, the maxillary incisors were slightly proclined and mandibular incisors retroclined.

Treatment objectives

- Correction of anterior crossbite
- Correction of crowding
- To obtain positive overjet and overbite
- To obtain better esthetics



Fig 1: Pre treatment facial and intraoral photographs

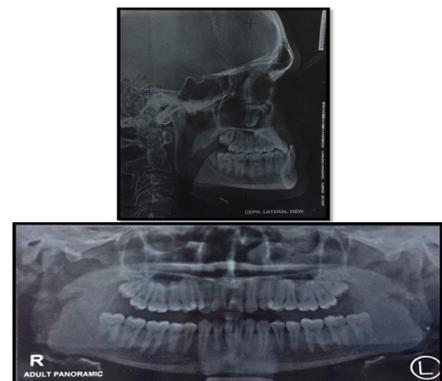


Fig 2: Pre treatment radiographs



Fig 3: Post treatment facial and intraoral photographs

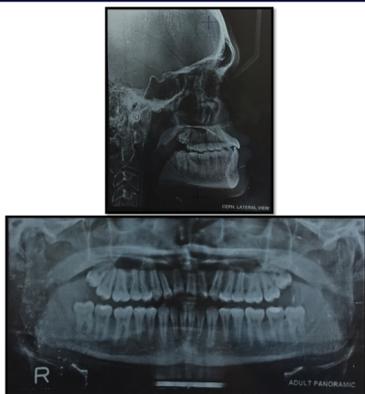


Fig 4: Post treatment lateral cephalogram.

Variables	Pre-treatment	Post functional appliance
Skeletal variables		
SNA (°)	80	78
SNB (°)	87	87
ANB (°)	-7	-9
FMA (°)	9	10
IMPA (°)	85	89
N perp- Pt. A	-5	-5
Dental variables		
U1-L1 (°)	149	129
U1-SN (°)	110	133
U1-NA (mm)	8	14
U1-NA (°)	32	48
LI-NB (mm)	1	1
LI-NB (°)	10	10
Soft tissue variable		
Nasolabial angle	90	88

Table 1: pre and post cephalometric values.

Treatment Plan & Progress

The upper incisors were in a crossbite relationship. To correct this problem, a protraction utility arch was used. A posterior bite block was placed to bring the anterior teeth out of occlusion which aided in correcting the crossbite. After the central incisors and the left lateral incisor were proclined to bring about a positive overbite, it was observed that the right lateral did not have enough space to bring it in occlusion. An open coil spring was placed between the central incisor and canine to open up space for the lateral incisor. After enough space was made for the lateral incisor, it was engaged in the wire and brought into occlusion.

Discussion

Since the patient had a skeletal Class III pattern with a retrognathic maxilla, the ideal plan would be an orthognathic surgical procedure to advance the maxilla. Since the patient was not willing for surgery, orthodontic camouflage treatment was executed. Orthodontic camouflage is a viable alternative for the treatment of the mild-to-moderate skeletal discrepancies of the maxillary structures with the aim of correcting the occlusal relationships in patients who, for different reasons, decide not to be treated surgically.⁵

Proffit and Ackerman⁶ in their concept of the "3 envelopes of discrepancies" suggested that the difference of maxillary incisor protrusion and mandibular incisor retrusion is a critical limitation for differentiating between orthodontic and combined orthodontic-surgical treatment. Kerr et al.⁷ tried to establish cephalometric yardsticks to objectify treatment decisions. The most important factors that differentiated the surgery and orthodontic patients in their study were size of the anteroposterior discrepancy, inclination of the mandibular incisors, and appearance of the soft-tissue profile. But sometimes due to some personal reasons patients do not opt for surgery. In such cases camouflage treatment is done.

In this particular case the maxillary anteriors were proclined beyond the normal values to bring a positive overjet and overbite. The lower teeth were more or less kept as it is.

Conclusion

The use of twin-block together with the combination-pull headgear produced desirable effects in our patient with skeletal Class II malocclusion. However other adverse effects like increase in Frankfort-mandibular planes angle were also seen. This treatment modality is case specific and cannot be routinely used in all patients having Class II malocclusions.

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